toms of poisoning by aconite soon followed—viz., nausea, efforts at vomiting, coldness of surface, weak circulation, laborious respiration, slight convulsive symptoms, and death. The immersion in simple tincture of aconite without chloroform did not cause any of the symptoms of poisoning. If, however, the sciatic nerve had been previously divided, then the immersion of the leg in the simple tincture of aconite was sufficient to poison the animal, evidently through the distension of the capillaries and the more rapid flow of blood caused by the division of the nerve. A ligature placed round the limb before the first symptoms of poisoning had appeared, prevented the toxic influence on the system, but it rarely did so after the appearance of the earliest symptoms. In albino rats the immersion of the leg in a solution of atropia in chloroform caused dilatation of the pupils already after two minutes and a half in young animals, after five minutes or later in old animals. If turpentine was substituted for chloroform, the dilatation of the pupils did not occur while the leg remained immersed in the fluid, but appeared immediately after the removal of the limb. The substitution of alcohol for chloroform as a solvent causes great retardation of absorption. An immersion of twenty to thirty minutes produced only very slight effects. Still more slow is the absorption when the atropia is dissolved in water with a slight addition of acetic acid, or when the watery extract of belladonna is rubbed over the leg. The immersion of the foot of a young rat in a solution of morphia in chloroform caused after about five minutes somnolency and great dilatation of pupils, which latter phenomenon certainly must appear very remarkable when we consider the effect of morphia, given in the usual way, on the pupil. Three minutes' immersion in a solution of strychnia in chloroform produced dilatation of the pupil, and after five minutes, the well-known symptoms of strychnia-poisoning manifested themselves. No effect was obtained when a solution of strychnia in alcohol was employed. These experiments clearly show how important is the choice of the menstruum in the endermic application of some medicinal substances.—*B. and F. Med.-Chir. Rev.*, January, 1861, from *Proceedings of Royal Society*, vol. x.

3. *Excretion of Kreatinin and Kreatin through the Urine.*—Schottin, having during several years bestowed much attention on the circumstances under which kreatin and kreatinin appear in the urine, considers that these substances are chiefly derived from the tissue-change of the striped muscles. The author inclines to the view, that kreatin and kreatinin pass by further oxidation into urea. In healthy urine he found, while merely vegetable food was consumed, no kreatin or kreatinin, and only a very small quantity under the influence of an almost entirely animal diet. In many diseases, too, these substances were not found; in some pathological conditions, however, in which either the transformation of these bodies into urea appeared to be prevented (uræmia), or in which the waste of muscular tissue was increased (as in typhoid fever), the amount of kreatin excreted by the kidneys ranges between 0.2 and 1.1 grammes (about 3 to 17 grains) within the twenty-four hours.—*B. and F. Med.-Chir. Rev.*, Jan., 1861, from *Archiv f. Heilkunde*, 1860.

MATERIA MEDICA AND PHARMACY.

4. *On Indian Hemp, particularly in relation to its property of producing Sleep.*—Dr. Fronmuller first employed the Indian hemp in the case of a phthisical patient in the year 1850, and since that time he has devoted himself to the especial study of the properties of this substance. The result has been the production of a treatise founded upon the clinical observation of no less than a thousand cases in which Indian hemp was administered. This plant has been very much extolled by many practitioners in various countries, but has lately fallen into disuse, owing to the supposed uncertainty of its operation. The discredit attached to it is attributed by Dr. Fronmüller partly to the contradictory

statements published concerning its operation by various writers, and partly to the difference in its effects in the Eastern hemisphere compared with those observed in Europe. The Indian hemp of India and that grown in Europe present the same external form, but they differ in the relative proportion of narcotic resin which each contains, and which is the active principle of the plant. It appears that the amount of resin depends not only upon differences of latitude, but also upon the depression or elevation of the regions where the plant is grown. Chemical analysis has discovered that the Indian hemp contains gum, bitter extractive matter, albumen, chlorophyll, ethereal oil, and a peculiar resin. This resin is called *cannabin* by some writers, and forms six to seven per cent. of the dried plant. The ethereal oil has been obtained by Martius only in small quantity; it is of a slightly yellowish colour, of a peculiar ethereal camphor-like smell, and an aromatic astringent, and afterwards bitter taste. The preparations of Indian hemp hitherto employed are the powdered plant for pills or powders, resinous extract of hemp in powders or pills, tincture of the resin, and emulsion.

With regard to its application to the practice of medicine, Indian hemp may be considered valuable as a tranquillizing antispasmodic drug. It has been employed with favourable results in tetanus and trismus, cardialgia, rheumatism, and in some mental diseases. Of 1000 cases in which this drug was administered by Dr. Fronmüller, 552 were males and 448 females, and the patients were of various ages, from one year to fifty and more. The principal diseases of the patients were tuberculosis, inflammation, surgical diseases, rheumatism, diseases of the eyes, nervous diseases, and dropsy. The greater part of the cases were treated by the spirituous extract prepared by Merk in Darmstadt; but others were treated by the extract prepared by the late Jacob Bell, of London. It is to be observed that all the observations were made on cases in which there had been no sleep for several nights, and in which the continuance of sleeplessness was to be anticipated unless some narcotic was employed.

Out of the thousand cases it was found that the narcotic property of the hemp was completely developed in 530, partially in 215, and little or not at all in 255. With the extract of Indian hemp the best effects were produced 145 times with a dose of 12 grains, 64 times with a dose of 8 grains, 63 times with a dose of 10 grains, 35 times with 16 grains, 22 times with 3 grains, 17 times with 2 grains, 15 times with 14 grains, 14 times with 20 grains, 13 times with 6 grains, 12 times with 5 grains. The period of falling to sleep, and the duration of sleep in the cases, are numerically recorded by Dr. Fronmüller, and also the number of cases in which unfavourable results ensued on the day of taking the drug, or on the next morning. Comparative observations were also made with morphia in cases where the Indian hemp had failed. Out of 29 cases in which Indian hemp had produced no effect, sleep was produced by morphia in 24. The dose of morphia was in general rather a strong one—from one-sixth of a grain to 2 grains—in order to induce sleep. In the remaining 5 cases the morphia produced no effect.

The conclusions to which Dr. Fronmüller arrives as the results of his observations are the following: 1. That Indian hemp, among all the known medicines which cause stupefaction, is that which produces a narcotism most completely supplying the want of natural sleep, without occasioning any great excitement of the vascular system, without special stoppage of the secretions, without the supervention of unfavourable consequences, and without subsequent paralysis. 2. That Indian hemp, on the other hand, is not so strong nor so certain in its operation as opium. 3. That Indian hemp may given in all acute inflammatory diseases and in typhus fever. 4. That it is worth a trial to alternate the Indian hemp with opium in cases where the latter fails. 5. That the best mode of administration is the alcoholic extract in small pills which contain an addition of the powder of the Indian hemp. The lowest dose for producing sleep may be estimated as eight grains given in pills of one grain each.—*B. and F. Med.-Chir. Rev.*, 1861, from *Vierteljahrschrift für die practische Heilkunde*, 1860.

[It is proper to add a caution in regard to such large doses. If the extract be of the *best quality*, eight grains might not always be a safe dose.—ED.]

5. *Oil of Turpentine as an Anæsthetic.*—Mr. JOHN WILMSHURST, in a communication in the *Lancet* (March 2, 1861), states that he has successfully